

IN THE CLAIMS

Please amend the claims as follows:

Claim 1 (Currently Amended): A data transmitting apparatus comprising:

a command transmission unit configured to transmit a response request command to a data receiving apparatus;

a control unit configured to receive a response message to the response request command from the data receiving apparatus, the response message including authentication data, which is generated in the data receiving apparatus prior to the data receiving apparatus receiving the response request command, the authentication data being based on shared data shared with said data receiving apparatus;

an expected value generation unit configured to generate an expected authentication value based on the shared data and a sequence number, the sequence number indicating an ordinal position of the response request command in a sequence of response request commands to be transmitted by the command transmission unit;

an authentication unit configured to produce an authentication result for said data receiving apparatus based on the expected authentication value generated by said expected value generation unit and said authentication data in the response message;

a measurement unit configured to measure a response time between transmitting the response request command and receiving the response message; and

a judgment unit configured to judge if a subsequent data transmission to said data receiving apparatus is granted based on the authentication result and the response time.

Claim 2 (Currently Amended): The data transmitting apparatus recited in claim 1, wherein:

said command transmission unit is further configured to transmit said response request command a maximum of ~~integer~~ N times, wherein N is an integer value;

said control unit is further configured to receive the response messages from the data receiving apparatus for each of the N transmitted response request commands; and

said authentication unit is further configured to produce authentication results based on said authentication data in each received response message.

Claim 3 (Currently Amended): A data transmission method comprising:
transmitting a response request command to a data receiving apparatus;
receiving a response message to the response request command from the data receiving apparatus at a data transmitting apparatus, the response message including authentication data, which is generated in the data receiving apparatus prior to the data receiving apparatus receiving the response request command, the authentication data being based on shared data shared with among the data transmitting apparatus and said data receiving apparatus;

generating an expected authentication value based on the shared data and a sequence number, the sequence number indicating an ordinal position of the response request command in a sequence of response request commands to be transmitted to the data receiving apparatus;

producing an authentication result for said data receiving apparatus based on the expected authentication value and said authentication data in the response message;

measuring a response time between transmitting the response request command and receiving the response message; and

judging if a subsequent data transmission to said data receiving apparatus is granted based on the authentication result and the response time.

Claim 4 (Currently Amended): A computer program storage medium storing computer program instructions which when executed by a computer cause the computer to perform the following steps:

controlling transmission of a command to a data receiving apparatus;

controlling reception of a response message to the command from the data receiving apparatus, the response message including authentication data, which is generated in the data receiving apparatus prior to the data receiving apparatus receiving the command, the authentication data being based on shared data shared with among the computer and said data receiving apparatus;

controlling generation of an expected authentication value based on the shared data and a sequence number, the sequence number indicating an ordinal position of the command in a sequence of commands to be transmitted to the data receiving apparatus;

controlling production of an authentication result for said data receiving apparatus based on the expected authentication value and said authentication data in the response message;

controlling measurement of a response time between transmitting the response request command and receiving the response message; and

judging if a subsequent data transmission to said data receiving apparatus is granted based on the authentication result and the response time.

Claim 5 (Canceled).

Claim 6 (Previously Presented): A data receiving apparatus configured to receive data from a data transmitting apparatus which judges whether data transmission is granted

based on authentication data and a response time between sending a response request command and receiving a response message, the data receiving apparatus comprising:

a command receiving unit configured to receive the response request command from the data transmitting apparatus;

an authentication data generation unit configured to generate said authentication data based on shared data shared with the data transmitting apparatus by subjecting said shared data to a predetermined process before said response request command is received from said data transmitting apparatus;

a response message generation unit configured to generate the response message to said response request command before said response request command is received from said data transmitting apparatus, said response message including said authentication data; and

a transmission unit configured to transmit said response message to said data transmitting apparatus when said response request command is received from said data transmitting apparatus.

Claim 7 (Previously Presented): The data receiving apparatus recited in claim 6, wherein:

said shared data is a quasi random number transmitted from said data transmitting apparatus before said response request command is transmitted; and

said authentication data generation unit is further configured to subject said quasi random number to a Keyed-Hash process to produce a Hash value that is used as said authentication data.

Claim 8 (Previously Presented): The data receiving apparatus recited in claim 6, wherein:

said authentication data generation unit is further configured to execute a Keyed-Hash process relative to said quasi random number and information specific to the information processing apparatus to produce a Hash value that is used as said authentication data.

Claim 9 (Currently Amended): The data receiving apparatus recited in claim 6, wherein:

said command receiving unit is further configured to receive said response request command from said data transmitting apparatus a maximum of ~~integer~~ N times, wherein N is an integer value;

said authentication data generation unit is further configured to execute said predetermined process relative to said shared data before a first one of said response request commands is received from said data transmitting apparatus and further configured to generate N sets of said authentication data corresponding to said N received response request commands; and

said transmission unit is further configured to transmit said response message generated by said response message generation unit to said data transmitting apparatus, said response message including the N sets of said authentication data in a sequence agreed beforehand with said data transmitting apparatus.

Claim 10 (Previously Presented): The data receiving apparatus recited in claim 9, wherein:

said authentication data generation unit is further configured to divide the data obtained by subjecting said shared data to said process into a plurality of data pieces and further configured to generate the N sets of said authentication data from the divided data.

Claim 11 (Previously Presented): The data receiving apparatus recited in claim 9, wherein:

said authentication data generation unit is further configured to generate the N sets of said authentication data based on data obtained at each process of repetitively executing said predetermined process relative to said shared data.

Claim 12 (Previously Presented): The data receiving apparatus recited in claim 6, wherein:

said transmission unit is further configured to transmit the response message to said transmitting apparatus when said response request command is received from the data transmitting apparatus, said response message containing new authentication data generated from said authentication data and information contained in said response request command.

Claim 13 (Previously Presented): A data reception method for a data receiving apparatus configured to receive data from a data transmitting apparatus which judges whether data transmission is granted based on authentication data and a response time between sending a response request command and receiving a response message, the data reception method comprising:

receiving the response request command from the data transmitting apparatus;

generating said authentication data based on shared data shared with the data transmitting apparatus by subjecting said shared data to a predetermined process before said response request command is received from said data transmitting apparatus;

generating the response message to said response request command before said response request command is received from said data transmitting apparatus, said response message including said authentication data; and

transmitting said response message to said data transmitting apparatus when said response request command is received from said data transmitting apparatus.

Claim 14 (Previously Presented): A computer program storage medium storing computer program instructions which, when executed by a computer configured to receive data from a data transmitting apparatus which judges whether data transmission is granted based on authentication data and a response time between sending a response request command and receiving a response message, causes the computer to perform the following steps:

controlling the reception of the response request command from the data transmitting apparatus;

controlling generation of said authentication data based on shared data shared with the data transmitting apparatus by subjecting said shared data to a predetermined process before said response request command is received from said data transmitting apparatus;

controlling generation of the response message to said response request command before said response request command is received from said data transmitting apparatus, said response message including said authentication data; and

controlling transmission of said response message to said data transmitting apparatus when said response request command is received from said data transmitting apparatus.

Claim 15 (Canceled).

Claim 16 (Currently Amended): An information transmitting apparatus comprising:
an authentication data generation unit configured to generate command authentication data and response expected value data from shared data shared with a data receiving

apparatus and a sequence number, the sequence number indicating an ordinal position of a response request command in a sequence of response request commands to be transmitted to said data receiving apparatus;

a command transmission unit configured to transmit the response request command to said data receiving apparatus, said response request command containing said command authentication data;

a response reception unit configured to receive a response message to said response request command from said data receiving apparatus;

an authentication unit configured to produce an authentication result for said data receiving apparatus based on said response expected value data and response authentication data, generated in said data receiving apparatus prior to the data receiving apparatus receiving the response request command and included in said response message received from said data receiving apparatus;

a measurement unit configured to measure a response time between transmitting the response request command and receiving the response message; and

a judgment unit configured to judge if a subsequent data transmission to said data receiving apparatus is granted based on the authentication result and the response time.

Claim 17 (Currently Amended): The data transmitting apparatus recited in claim 16, wherein:

said command transmission unit is further configured to transmit said response request command a maximum of $[[k]]$ N times, wherein N is an integer value;

said control unit is further configured to receive the response messages from the data receiving apparatus for each of the N transmitted response request commands; and

said authentication unit is further configured to produce authentication results based on said authentication data in each received response message.

Claim 18 (Currently Amended): A data transmission method comprising:

generating command authentication data and response expected value data from shared data shared with a data receiving apparatus and a sequence number, the sequence number indicating an ordinal position of a response request command in a sequence of response request commands to be transmitted to the data receiving apparatus;

transmitting the response request command to said data receiving apparatus, said response request command containing said command authentication data;

receiving a response message to said response request command from said data receiving apparatus;

producing an authentication result for said receiving apparatus based on said response expected value data and response authentication data, generated in said data receiving apparatus prior to the data receiving apparatus receiving the response request command and included in said response message received from the data receiving apparatus;

measuring a response time between transmitting the response request command and receiving the response message; and

judging if a subsequent data transmission to said data receiving apparatus is granted based on the authentication result and said response time.

Claim 19 (Currently Amended): A computer program storage medium storing computer program instructions which when executed by a computer cause the computer to perform the following steps:

generating command authentication data and response expected value data from shared data shared with a data receiving apparatus and a sequence number, the sequence number indicating an ordinal position of a response request command in a sequence of response request commands to be transmitted to the data receiving apparatus;

transmitting the response request command to said data receiving apparatus, said response request command containing said command authentication data;

receiving a response message to said response request command from said data receiving apparatus;

producing an authentication result for said receiving apparatus based on said response expected value data and response authentication data, generated in said data receiving apparatus prior to the data receiving apparatus receiving the response request command and included in said response message received from the data receiving apparatus;

measuring a response time between transmitting the response request command and receiving the response message; and

judging if a subsequent data transmission to said data receiving apparatus is granted based on the authentication result and said response time.

Claim 20 (Canceled).

Claim 21 (Currently Amended): A data receiving apparatus configured to receive data from a data transmitting apparatus which judges whether data transmission is granted based on a response time between sending a response request command and receiving a response message, the data receiving apparatus comprising:

a generating unit configured to generate, prior to reception of the response request command from the data transmitting apparatus, command expected value data and response

authentication data from shared data shared with said data transmitting apparatus and a sequence number, the sequence number indicating an ordinal position of the response message in a sequence of response messages to be transmitted to the data transmitting apparatus, each of said command expected value data and said response authentication data corresponding to authentication data in said response request command generated at said data transmitting apparatus from said shared data;

an authenticating unit configured to produce an authentication result for said data transmitting apparatus based on the authentication data in said response request command and said command expected value data when said response request command is received from said data transmitting apparatus; and

a transmission unit configured to transmit the response message containing said response authentication data to said data transmitting apparatus based on the authentication result by said authenticating unit.

Claim 22 (Currently Amended): A data reception method for a data receiving apparatus configured to receive data from a data transmitting apparatus which judges whether data transmission is granted based on a response time between sending a response request command and receiving a response message, the method comprising:

generating command expected value data and response authentication data, prior to reception of the response request command from the data transmitting apparatus, based on ~~from~~ shared data shared with said data transmitting apparatus and a sequence number, the sequence number indicating an ordinal position of the response message in a sequence of response messages to be transmitted to said data transmitting apparatus, each of said command expected value data and said response authentication data corresponding to

authentication data in said response request command generated at said data transmitting apparatus from said shared data;

producing an authentication result for said data transmitting apparatus based on the authentication data in said response request command and said command expected value data when said response request command is received from said data transmitting apparatus; and

transmitting the response message containing said response authentication data to said data transmitting apparatus based on the authentication result.

Claim 23 (Currently Amended): A computer program storage medium storing computer program instructions which, when executed by a computer configured to receive data from a data transmitting apparatus which judges whether data transmission is granted based on a response time between sending a response request command and receiving a response message, causes the computer to perform the following steps:

generating command expected value data and response authentication data, prior to reception of the response request command from the data transmitting apparatus, based on ~~from~~ shared data shared with said data transmitting apparatus and a sequence number, the sequence number indicating an ordinal position of the response message in a sequence of response messages to be transmitted to the data transmitting apparatus, each of said command expected value data and said response authentication data corresponding to authentication data in said response request command generated at said data transmitting apparatus from said shared data;

producing an authentication result for said data transmitting apparatus based on the authentication data in said response request command and said command expected value data when said response request command is received from said data transmitting apparatus; and

transmitting the response message containing said response authentication data to said data transmitting apparatus based on the authentication result.

Claim 24 (Canceled).

Claim 25 (Previously Presented): A communication system comprising:

a data transmitting apparatus including

a command transmission unit configured to transmit a response request command to a data receiving apparatus,

a control unit configured to receive a response message to the response request command from the data receiving apparatus, the response message including authentication data based on shared data shared with said data receiving apparatus,

an expected value generation unit configured to generate an expected authentication value based on the shared data,

an authentication unit configured to produce an authentication result for said data receiving apparatus based on the expected value and said authentication data,

a measurement unit configured to measure a response time between transmitting the response request command and receiving the response message, and

a judgment unit configured to judge if a subsequent data transmission to said data receiving apparatus is granted based on the authentication result and the response time; and

the data receiving apparatus configured to receive data from the data transmitting apparatus, the data receiving apparatus including

a command receiving unit configured to receive the response request command from the data transmitting apparatus,

an authentication data generation unit configured to generate said authentication data based on the shared data by subjecting said shared data to a predetermined process before said response request command is received from said data transmitting apparatus,

a response message generation unit configured to generate the response message to said response request command before said response request command is received from said data transmitting apparatus, said response message including said authentication data, and

a transmission unit configured to transmit said response message to said data transmitting apparatus when said response request command is received from said data transmitting apparatus.

Claim 26 (Currently Amended): A communication system comprising:

an information transmitting apparatus including

an authentication data generation unit configured to generate command authentication data and response expected value data from shared data shared with a data receiving apparatus and a sequence number, the sequence number indicating an ordinal position of a response request command in a sequence of response request commands to be transmitted to said data receiving apparatus,

a command transmission unit configured to transmit the response request command to said data receiving apparatus, said response request command containing said command authentication data,

a response reception unit configured to receive a response message to said response request command from said data receiving apparatus,

an authentication unit configured to produce an authentication result for said information receiving apparatus based on said response expected value data and response authentication data in said response message received from said data receiving apparatus,

a measurement unit configured to measure a response time between transmitting the response request command and receiving the response message, and

a judgment unit configured to judge if a subsequent data transmission to said data receiving apparatus is granted based on the authentication result and the response time; and

the data receiving apparatus configured to receive data from the data transmitting apparatus, the data receiving apparatus including

a generating unit configured to generate command expected value data and the response authentication data, prior to reception of the response request command from the data transmitting apparatus, from the shared data, each of said command expected value data and said response authentication data corresponding to the command authentication data in said response request command generated at said data transmitting apparatus from said shared data;

an authenticating unit configured to produce an authentication result for said data transmitting apparatus based on the command authentication data in said response request command and said command expected value data when said response request command is received from said data transmitting apparatus; and

a transmission unit configured to transmit the response message containing said response authentication data to said data transmitting apparatus based on the authentication result by said authenticating unit.